Air Quality Permitting
Statement of Basis

September 20, 2005

Permit to Construct No. P-050104

Potlatch Corporation
Post Falls Particleboard
Post Falls, ID

Facility ID No. 055-00018

Prepared by:

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AIR QUALITY DIVISION

Final

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Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
BACT	Best Available Control Technology
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
O_3	ozone
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
T/yr	tons per year
$\mu g/m^3$	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

The Potlatch Post Falls facility manufactures particleboard from wood shavings and resin. Trucks deliver and dump wood shavings in one of two storage buildings. A drag chain feeds the wood shaving to milling machines, which process the wood shavings into furnish. The furnish is dried in an rotary dryer and temporarily stored the outside dry silo. Furnish from the outside dry silo and sanderdust is then passed through a weigh system to either the #1 small blender and main blender, or the #2 small blender. In the blenders, resin is mixed with the sanderdust and furnish. The mix is conveyed to a former where the mix takes the shape of a mat approximately the size of a 4'X8' particleboard panel. The mats are pressed by the particleboard press, allowed to cool, cut to size, and sanded. Scrap from the saw line is processed back into furnish. Sanderdust generated by the process is stored, used for the manufacturing process or as fuel for the facility's Kipper and Sons boiler, or sold. The Kipper and Sons boiler provides steam heat for the process and plant make-up air.

3. FACILITY / AREA CLASSIFICATION

Potlatch's Post Falls facility is defined as a major facility in accordance with IDAPA 58.01.01.008.10 for Tier I permitting purposes because the facility has the potential to emit (PTE) NO_x and VOC at over 100 T/yr. The facility is not a Prevention of Significant Deterioration (PSD) major source because emissions do not exceed the PSD threshold of 250 T/yr. The AIRS classification is "A" because potential emissions of NO_x and VOC are greater than 100 T/yr.

The facility is located within AQCR 62 and UTM zone 11. The facility is located in Kootenai County which is designated as attainment for Ozone and $PM_{2.5}$ and unclassifiable for all other criteria pollutants.

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at the facility. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

The proposed project involves the installation of equipment to recover sanderdust generated by the manufacturing process and to use some of it in the manufacturing process rather than use it as hog fuel. The proposed project also seeks to establish federally enforceable limits on HAP emissions so that the facility is a non-major HAP source, and therefore, not subject to 40 CFR 63, Subpart DDDD.

4.1 Application Chronology

February 2, 2005	DEQ receives application
March 3, 2005	DEQ determines application complete
April 21, 2005	DEQ receives additional information
May 10, 2005	DEQ provides draft permit to facility for review
July 14 – August 15, 2005	DEQ provides proposed permit for public comment

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The following equipment is affected by this permit modification

Drag Chain
Rotex Screens #1, #2; Hammermills
Blender, Former
Board Cooler, Process Fugitives, Rip & Tim Saws
Board Trim Hog
Sanderdust Storage Silo
Sander
Boiler Fuel Overs
Boiler
Particle Dryer
Press

5.2 Emissions Inventory

Table 1 and 2 summarize TAP, PM_{10} and VOC annual emissions resulting from the proposed project. PM_{10} and VOC PTE values given in Table 1 represent annual emissions at the design maximum capacity of the facility. PM_{10} values given in Table 1 also represent controlled annual emissions. TAP emission rates given in Table 2 represent uncontrolled emissions at the maximum design capacity of the facility. A detailed emission inventory has been included in Appendix B

The proposed project decreases HAP emissions by 4.37 T/yr, and increases VOC emissions by 37 T/yr. The facility's potential to emit of VOCs, after this proposed modification, is 135 T/yr.

Table 1. EMISSIONS ASSOCIATED WITH SANDERDUST PROJECT

Source Description	Change in PM_{10} PTE	Facility-Wide PM_{10} PTE	Facility-Wide VOC PTE
	T/yr	T/yr	T/yr
Drag Chain Baghouse Stack	1.12	15.77	
Particle Dryer Multiclone Stack	4.75	17.17	63.34
Scalper Baghouse Stack	0.45	6.38	
Hammermill Baghouse/ Reclaim Baghouse Stack	1.19	10.04	
Sander Air System Baghouse Stack	1.27	17.89	3.31
Sanderdust Silo Baghouse Stack	0.13	1.88	
East/West Sawline Baghouse Stack	1.60	12.39	3.46
Sanderdust Overs Baghouse Stack	0.07	0.94	
Electrostatic Precipitator Stack	NA	5.67	
North, East, & West Press Vents	5.34	19.3	65.28

Table 2. TOXIC POLLUTANT EMISSION RATES

Source Description	Acetaldehyde (lb/hr)	Acrolein (lb/hr)	Benzene (lb/hr)	MDI (lb/hr)	Methylene Chloride (lb/hr)	Propionaldehyde (lb/hr)
Drag Chain Baghouse Stack						
Particle Dryer Multiclone Stack	9.29E-02	2.18E-02	9.29E-03		3.11E-03	5.95E-03
Scalper Baghouse Stack						
Hammermill Baghouse/ Reclaim Baghouse Stack						
Sander Air System Baghouse Stack	1.08E-02	9.76E-03	4.01E-03		4.26E-03	1.10E-02
Sanderdust Silo Baghouse Stack						
West Press Vents	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
East Press Vents	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
North Press Vents	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
East/West Sawline Baghouse Stack	4.76E-03	1.21E-02	4.76E-03		5.26E-03	1.35E-02

5.3 *Modeling*

The proposed project increases emissions of PM_{10}, acrolein, MDI, propionaldehyde, acetaldehyde, benzene, and methylene chloride. Acrolein, MDI, propionaldehyde, acetaldehyde, benzene, and methylene chloride exceed their respective EL values in IDAPA 58.01.01.585 and 586. Modeling was performed to assure compliance with respective AAC and AACC concentrations. No emission limits were included in the permit to construct because the modeled concentration represented the uncontrolled ambient concentration of those pollutants.

PM_{10} emissions exceeded significant contribution levels for the annual averaging period only, and a facility wide impact analysis was performed. The results of the modeling analysis are presented below. A detailed modeling analysis has been included in Appendix C.

Table 3 SIGNIFICANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Ambient Concentration ($\mu g/m^3$)	Significant Contribution Levels ($\mu g/m^3$)	Exceeds the SCL (Y or N)
PM_{10}	24-hour	4.98	5	N
	Annual	2.25	1	Y

Table 4 FACILITY-WIDE FULL IMPACT ANALYSIS

Pollutant	Averaging Period	Facility Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	Annual	19.2	23.7	46.2	86%

Table 5 TOXIC POLLUTANT CONCENTRATIONS

Noncarcinogens	Averaging Period	Concentration ($\mu g/m^3$)	AAC ($\mu g/m^3$)	Percent of AAC
Acrolein	24-HR	0.22241	12.5	1.8%
MDI	24-HR	0.02415	2.5	1.0%
Propionaldehyde	24-HR	0.21	21.5	1.0%
Carcinogens	**Averaging Period**	**Concentration ($\mu g/m^3$)**	**AACC ($\mu g/m^3$)**	**Percent of AACC**
Acetaldehyde	Annual	0.0924	4.50E-01	20.5%
Benzene	Annual	0.02	1.20E-01	16.7%
Methylene Chloride	Annual	0.01832	2.40E-01	7.6%

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

The proposed project is subject to IDAPA 58.01.01.201 and does not qualify for a PTC exemption; therefore, a PTC is required.

IDAPA 58.01.01.203 ..... Permit for New and Modified Stationary Sources

This regulation stipulates that the facility must demonstrate compliance with all applicable requirements, not cause or significantly contribute to a violation of the NAAQS, and comply with IDAPA 58.01.01.161. The facility has provided information to assure compliance with this requirement.

IDAPA 58.01.01.209.05 ..... Permit To Construct Procedures for Tier I Sources

This regulation stipulates the procedures for owner or operators of Tier I sources that require a permit to construct. The facility has complied with the procedures therein.

IDAPA 58.01.01.210 ..... Demonstration of Preconstruction Compliance with Toxic Standards

The applicant has demonstrated preconstruction compliance for all TAPs identified in the permit application.

IDAPA 58.01.01.300 ..... Procedures and Requirements for Tier I Operating Permits

The facility is Tier I major facility with a current Tier I operating permit. The proposed project is significant modification of the current Tier I operating permit.

IDAPA 58.01.01.382 ..... Significant Permit Modification

This regulation stipulates the criteria and procedures for a significant permit modification. The proposed project is significant modification of the current Tier I operating permit that meets the criteria and procedures specified within the regulation.

5.5 Permit Conditions Review

5.5.1 Permit Condition 2.4 contains the visible emission requirements for the particleboard manufacturing process.

5.5.3 Permit Conditions 2.7, 2.8, and 2.11 establish the operating, monitoring, and recordkeeping requirements necessary to demonstrate compliance with opacity limits of Permit Condition 2.4. These permit requirements, along with General Provision 2, require the permittee to operate the control equipment associated with the particleboard manufacturing process when it is operating, and assures compliance with the opacity requirements of Permit Condition 2.4.

5.5.4 Permit Conditions 2.3 limits the PTE of facility-wide HAPs below major source thresholds. To address facility concerns regarding the effective date facility-wide HAP limits, language has been included clarifying that the limits are effective 180 operating days from the commencement of operation of the former.

5.5.5 Permit Condition 2.5 establishes the performance test requirements necessary to demonstrate compliance with Permit Condition 2.3. A performance test to measure total HAP was required in order to demonstrate compliance with the facility-wide HAP emission limit of less than 25 tons per any consecutive 12-month period (T/yr) for any combination of HAPs of Permit Condition 2.5. Performance tests to measure formaldehyde and methanol were required to demonstrate compliance with the facility-wide HAP emission limit of less than 10 tons per any consecutive 12-month period (T/yr) for any single HAP of permit condition 2.5. Permit Condition 2.5 shall be used to develop emission factor data necessary to demonstrate continuing compliance with Permit Condition 2.3. Permit Condition 2.5 also requires the permittee to conduct the performance test at minimum of 90% of the maximum furnish usage rate of the process in order to assure compliance with Permit Condition 2.3.

5.5.6 Permit Condition 2.5 defines total HAPs for the Permit. The definition was taken from 40 CFR 63.2292, and was included in the Permit to be consistent with 40 CFR 63, Subpart DDDD. The performance tests listed in Permit Condition 2.5 were also taken from 40 CFR 63, Subpart DDDD in order to be consistent with that subpart. No performance test were required to be performed on particle dryer because it's compliance demonstration procedures are based on formaldehyde and methanol emission factor developed from source tests at the facility. No performance tests were required to be performed on the sander air system and boiler because their compliance demonstration procedures are based on industry specific emission factors from NCASI Technical Bulletin No. 0771: Volatile Organic Compound Emissions from Wood Products Manufacturing Facilities, Part IV – Particleboard, published 1999.

5.5.7 Permit Condition 2.10 requires that the permittee monitor and record monthly and annually the HAP emissions from the press vents and East & West Sawline baghouses using the emission factors and furnish usage records required by Permit Conditions 2.5 and 2.9, respectively, to demonstrate compliance with Permit Condition 2.3. Permit Condition 2.10 requires that the permittee monitor and record monthly and annually the HAP emissions from the sander air system, particle dryer, and boiler using the furnish usage records required by Permit Condition 2.9. Emissions will be estimated using a spreadsheet similar to those included in Appendix B. Records of the information used to determine monthly and annually the HAP emissions shall be maintained on site for the most recent two year period and shall be made available to DEQ representatives upon request in order to demonstrate compliance with Permit Condition 2.3

5.5.8 Permit Condition 2.8 establishes a maximum pressure for boiler steam in order to limit emissions of. As taken from the July 19, 2001 technical analysis memorandum, the maximum pressure of 300 psi absolute corresponds to an actual dryer temperature of 397 deg. F, the temperature which Potlatch and DEQ has established to limit formaldehyde emissions.

6. PERMIT FEES

The facility submitted the required application fee of $1,000.00 on February 2, 2005, with their permit application. A processing fee of $5,000.00 was received on May 25, 2005.

Table 6. PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM_{10}	16	0	16
VOC	37	0	37
TAPS/HAPS	0	-4.37	-4.37
Total:	0.0	0	**48.63**
Fee Due	**$ 5,000.00**		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

Regional office review was provided in conjunction with the facility review of the draft permit.

7.2 Facility Review of Draft Permit

A facility draft permit was received by the facility on May 10, 2005.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Potlatch Corporation, Post Falls, be issued final PTC No. P-050104 for the sanderdust project. The project does not involve PSD requirements.

AC/sd Permit No. P-050104

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Appendix A

AIRS Information

P-050104

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Potlatch Corporation
Facility Location: Post Falls
AIRS Number: 055-00018

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	A							U
NO_x	A						A	U
CO	B							U
PM_{10}	B		B					U
PT (Particulate)	B							U
VOC	A						A	U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			DC					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-050104

Table 5. Criteria Pollutant Emissions Affected by the Sanderdust Project

		Current Actual (2003/2004 Average)				Future Potential Emissions				
		Hourly		Annual		Hourly		Annual		
Throughput		9.6 msf/hr 13 ODT/hr 28,620 lb furnish/hr		69,414 msf/year 91,600 ODT/year 103,454 tons furnish/year		12.1 msf/hr 16 ODT/hr 36,090 lb furnish/hr		96,000 msf/year 126,684 ODT/yr 143,076 tons furnish/year		
	Emission Factor	Throughput	Emissions (lbs)	Throughput	Emissions (tons)	Throughput	Emissions (lbs)	Throughput	Emissions (tons)	Emision Factor Source & Remarks
MC-1: Particle Dryer										
PM10	0.24 lb/ton furnish	14.3 tons furnish/hr	3.4	103,454 tons furnish/year	12.41	18.0 tons furnish/hr	4.3	143,076 tons furnish/year	17.17	Source Tests 2/12/2002
VOC (THC as carbon)	1.00 lb/ODT	12.7 ODT/hr	12.7	91,600 ODT/year	45.80	16.0 ODT/hr	16.0	126,684 ODT/year	63.34	NCASI TB 771, Table 6.2.1., Mill 156
PV-1: Press Vent 1										
Particulate	0.402 lb/msf	9.6 msf/hr	3.9	69,414 msf/year	13.96	12.1 msf/hr	4.87	96,000 msf/year	19.30	Source Tests 2/24/1995
VOC	1.36 lb/msf	9.6 msf/hr	13.1	69,414 msf/year	47.20	12.1 msf/hr	16.47	96,000 msf/year	65.28	Source Tests 2/24/1995
BV-2: Building Vent 2 (North Raw Material Storage Building)										
Particulate	0.0001 lb/ton furnish	14.3 tons furnish/hr	0.0014	103,454 tons furnish/year	0.005	18.0 tons furnish/hr	0.002	143,076 tons furnish/year	0.007	AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles, 1/95
BV-3: Building Vent 3 (South Raw Material Storage Building)										
Particulate	0.0001 lb/ton furnish	14.3 tons furnish/hr	0.0014	103,454 tons furnish/year	0.005	18.0 tons furnish/hr	0.0018	143,076 tons furnish/year	0.007	AP-42, Chapter 13.2.4, Aggregate Handling and Storage Piles, 1/95
BH-1, Drag Chain Baghouse										
PM10	3.60 lb/hr		3.60	8,136 hours/year	14.64		3.60	8,760 hours/year	15.77	Typ manuf's guarantee & 42,000 cfm
BH-3A: Hammer Mill Cyclone Bag Collector										
PM10	2.19 lb/hr		2.19	8,136 hours/year	8.89		2.19	8,760 hours/year	9.58	Typ manuf's guarantee & 25,510 cfm
BH-3: Reclaim Air System Baghouse										
PM10	1.63 lb/hr		1.63	8,136 hours/year	6.65		1.63	8,760 hours/year	7.16	Typ manuf's guarantee & 19,060 cfm
BH-5A: Outside Silo High Pressure Air System Baghouse										
PM10	0.43 lb/hr		0.43	8,136 hours/year	1.74		0.43	8,760 hours/year	1.88	Typ manuf's guarantee & 5,000 cfm
BH-5: Scalper Air System Baghouse										
PM10	1.03 lb/hr		1.03	8,136 hours/year	4.18		1.03	8,760 hours/year	4.51	Typ manuf's guarantee & 12,000 cfm
BH-6: Sanderdust Silo Negative Air System Baghouse										
PM10	0.43 lb/hr		0.43	8,136 hours/year	1.74		0.43	8,760 hours/year	1.88	Typ manuf's guarantee & 5,000 cfm
BH-7: Sander Air System Baghouse										
PM10	4.09 lb/hr		4.09	8,136 hours/year	16.62		4.09	8,760 hours/year	17.89	Typ manuf's guarantee & 47,660 cfm
VOC (THC as carbon)	0.069 lb/msf	9.6 msf/hr	0.66	69,414 msf/year	2.39	12.1 msf/hr	0.84	96,000 msf/year	3.31	NCASI TB 771 Table 6.4.1 Mill 156
BH-8: Sanderdust Overs Baghouse										
PM10	0.21 lb/hr		0.21	8,136 hours/year	0.87		0.21	8,760 hours/year	0.94	Typ manuf's guarantee & 2,500 cfm
BH-10A, East Sawline Baghouse (handles half board cooler flow)										
PM10	2.57 lb/hr		2.57	8,136 hours/year	10.46		2.57	8,760 hours/year	11.26	Typ manuf's guarantee & 30,000 cfm
VOC (THC as carbon)	0.072 lb/msf	4.8 msf/hr	0.35	34,707 msf/year	1.25	6.1 msf/hr	0.44	48,000 msf/year	1.73	NCASI TB 771 Table 6.4.1 (mill 039)
BH-10, West Sawline Baghouse (handles half board cooler flow)										
PM10	2.57 lb/hr		2.57	8,136 hours/year	10.46		2.57	8,760 hours/year	11.26	Typ manuf's guarantee & 30,000 cfm
VOC (THC as carbon)	0.072 lb/msf	4.8 msf/hr	0.35	34,707 msf/year	1.25	6.1 msf/hr	0.44	48,000 msf/year	1.73	NCASI TB 771 Table 6.4.1 (mill 039)
Total PM					103				119	
Total VOC					98				135	
Assumed baghouse efficiency 0.01 gr/acfm					13 % furnish moisture					

Table 6. Hazardous Air Pollutant Emissions Associated with the Sanderdust Project

	Emission Factor	Current Actual (2003/2004 Average) Hourly		Annual		Future Potential Emissions Hourly		Annual		
Throughput		9.6 msf/hr 12.7 ODT/hr 28,620 lb furnish/hr		69,414 msf/year 91,800 ODT/year 103,454 tons furnish/year		12.1 msf/hr 16 ODT/hr 36,000 lb furnish/hr		98,000 msf/year 129,694 ODT/yr 143,978 tons furnish/year		
		Throughput	Emissions (lbs)	Throughput	Emissions (tons)	Throughput	Emissions (lbs)	Throughput	Emissions (tons)	Emission Factor Source & Remarks
BC-1: Particle Dryer										
HAPs	0.22 lb/ODT	12.7 ODT/hr		91,800 ODT/year		16.0 ODT/hr		129,694 ODT/year		NCASI TB 771, Table 6.2.1., Mill 156
Formaldehyde	0.002 lb/msf	9.6 msf/hr	0.02	69,414 msf/year	0.07	12.1 msf/hr	0.02	98,000 msf/year	0.10	Source Tests 2/12/2002
Methanol	0.008 lb/msf	9.6 msf/hr	0.08	69,414 msf/year	0.28	12.1 msf/hr	0.10	98,000 msf/year	0.39	Source Tests 2/12/2002
Total HAPs adjusted by source tests	0.060 lb/msf	9.6 msf/hr	0.57	69,414 msf/year	3.16	12.1 msf/hr	1.09	98,000 msf/year	4.35	NCASI total w/source test formaldehyde and methanol
PV-1: Press Vent 1										
HAPs	0.43 lb/msf									NCASI TB 771, Table 6.3.1. Mill 156
Formaldehyde	0.091 lb/msf	9.6 msf/hr	0.8	69,414 msf/year	2.12	12.1 msf/hr	0.27	98,000 msf/year	1.06	Source Tests 2/12/2002 and closedd caul tests
Methanol	0.26 lb/msf	9.6 msf/hr	2.5	69,414 msf/year	8.69	12.1 msf/hr	0.82	98,000 msf/year	3.24	Source Tests 2/12/2002, and closed caul tests
Total HAPs adjusted by source tests	0.33 lb/msf	9.6 msf/hr	3.1	69,414 msf/year	11.36	12.1 msf/hr	1.16	98,000 msf/year	4.59	NCASI total, source test F & M, and closed caul tests
SH-7: SANDER AIR SYSTEM BAGHOUSE										
Formaldehyde (ND)	0.001 lb/msf	9.6 msf/hr	0.01	69,414 msf/year	0.04	12.1 msf/hr	0.013	98,000 msf/year	0.05	NCASI TB 771 Table 6.4.1 (mill 039)
Methanol	0.01 lb/msf	9.6 msf/hr	0.12	69,414 msf/year	0.48	12.1 msf/hr	0.16	98,000 msf/year	0.62	NCASI TB 771 Table 6.4.1 (mill 039)
Total HAPs	0.027 lb/msf	9.6 msf/hr	0.26	69,414 msf/year	0.94	12.1 msf/hr	0.33	98,000 msf/year	1.30	NCASI TB 771 Table 6.4.1 (mill 039)
SH-16A, East Sawline Baghouse (handles half board cooler flow)										
Formaldehyde	0.003 lb/msf	4.8 msf/hr	0.01	34,707 msf/year	0.05	6.1 msf/hr	0.016	49,000 msf/year	0.09	NCASI TB 771 Table 6.4.1 (mill 156)
Methanol	0.06 lb/msf	4.8 msf/hr	0.28	34,707 msf/year	1.02	6.1 msf/hr	0.36	49,000 msf/year	1.42	NCASI TB 771 Table 6.4.1 (mill 156)
Total HAPs	0.063 lb/msf	4.8 msf/hr	0.30	34,707 msf/year	1.09	6.1 msf/hr	0.38	49,000 msf/year	1.51	NCASI TB 771 Table 6.4.1 (mill 156)
SH-16, West Sawline Baghouse (handles half board cooler flow)										
Formaldehyde	0.003 lb/msf	4.8 msf/hr	0.01	34,707 msf/year	0.05	6.1 msf/hr	0.02	49,000 msf/year	0.09	NCASI TB 771 Table 6.4.1 (mill 156)
Methanol	0.06 lb/msf	4.8 msf/hr	0.3	34,707 msf/year	1.02	6.1 msf/hr	0.36	49,000 msf/year	1.42	NCASI TB 771 Table 6.4.1 (mill 156)
Total HAPs	0.063 lb/msf	4.8 msf/hr	0.30	34,707 msf/year	1.09	6.1 msf/hr	0.38	49,000 msf/year	1.51	NCASI TB 771 Table 6.4.1 (mill 156)
Total formaldehyde			0.64		2.32		0.34		1.33	NCASI, source tests, and Borden results for press vents
Total methanol			3.26		11.80		1.79		7.08	NCASI, source tests, and Borden results for press vents
Total HAPs					17.60				13.23	NCASI, source tests, and Borden results for press vents

Notes:

Actual throughput in 2003	117,637 tons furnish/year	73,539 msf/year	0.63 msf/ton furnish	1.60 tons furnish/msf	12.9 % furnish moisture
Actual throughput in 2004	89,270 tons furnish/year	65,289 msf/year	0.73 msf/ton furnish	1.37 tons furnish/msf	

Press vent formaldehyde and methanol emission factors reduced by 64% and 74%, respectively, for future condition based on Borden test with 1% iso.

NCASI HAP emission factors for sander system only applied once (i.e. not to each of 3 sander-related baghouses)

Adjust NCASI emission factor for "Total HAPs" from the particle dryer to reflect 2002 source test results:			
NCASI total HAPs	0.22 lb/ODT		
NCASI formaldehyde	0.12 lb/ODT		
NCASI methanol	0.043 lb/ODT		
NCASI total - NCASI Formaldehyde - NCASI methanol	0.057 lb/ODT		
1 ton furnish =	0.89 tons ODT		
1 ton furnish =	0.63 msf		
1 ODT =	1.13 tons furnish		
0.057 lb/ODT = .057 lb/1.13 tons furnish =	0.0505 lb ton/furnish =	0.080 lb/msf	< without source test F&M
	source test formaldehyde:	0.002 lb/msf	
	source test methanol:	0.008 lb/msf	
		0.060 lb/msf	< with source test F&M

Adjust NCASI emission factor for "Total HAPs" from press vents to reflect 2002 source test results:		
NCASI total HAPs	0.43 lb/msf	
NCASI formaldehyde	0.084 lb/msf	
NCASI methanol	0.34 lb/msf	
NCASI total - NCASI Formaldehyde - NCASI methanol	0.008 lb/msf	< without source test F&M
source test formaldehyde:	0.091 lb/msf	
source test methanol:	0.280 lb/msf	
	0.327 lb/msf	< with source test F&M

Appendix C

Modeling Review

P-050104

MEMORANDUM

DATE: May 31, 2005

TO: Almer Casile, Air Quality Division

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator, Air Quality Division

FROM: Dustin Holloway, Modeling Analyst, Air Quality Division

PROJECT NUMBER: P-050104

SUBJECT: Modeling Review for the Potlatch Corp. Post Falls, Facility ID No. 055-00018

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1. SUMMARY

The Potlatch Corp. (Potlatch) submitted a dispersion modeling analysis in support of a permit to construct application to install and operate equipment to recover sander dust. Potlatch contracted Geomatrix Consultants, Inc. to conduct the analysis. The analysis includes a toxic pollutant impact analysis, a significant impact analysis for PM_{10}, and a full-impact analysis for annual PM_{10} concentrations. The results of the analysis demonstrate, to DEQ's satisfaction, that the sander dust project will not cause or significantly contribute to a violation of any ambient air quality standard. Table 1.1 presents key assumptions which should be considered when developing the permit.

Table 1.1 KEY ASSUMPTIONS USED IN MODELING ANALYSIS

Assumption	Explanation
Press vent stacks will be raised to 66 feet	The applicant proposed raising these stacks. The modeling analysis is based on this assumption. Without increasing the stack heights, there is a potential that the significant impact levels for 24-hour PM_{10} concentrations will be exceeded.

Based on the results of the analyses, DEQ has determined that the modeling analysis: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) appropriately adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations at all receptor locations, when appropriately combined with background concentrations, were below stated air quality standards; 5) showed that the increase in toxic air pollutant (TAP) concentrations are within the applicable allowable concentrations in IDAPA 58.01.01.585-586.

2. BACKGROUND INFORMATION

2.1 Applicable Air Quality Impact Limits

Potlatch is located in Post Falls, in Kootenai County. Kootenai County is designated unclassifiable for all criteria air pollutants. Table 2.1 provides significant contribution levels (SCL), national ambient air quality standards (NAAQS) for criteria pollutants, and allowable TAP increments. Project-specific emissions above the SCL necessitate facility-wide modeling to demonstrate compliance with NAAQS.

Table 2.1 APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels ($\mu g/m^3$)[a, b]	Regulatory Limit ($\mu g/m^3$)[c]	Modeled Value Used[d]
PM_{10}[e]	Annual	1	50[f]	Maximum 1st highest[g]
	24-hour	5	150[h]	Maximum 6th highest[i] Highest 2nd highest[j]
CO	8-hour	500	10,000[k]	Highest 2nd highest[g]
	1-hour	2000	40,000[k]	Highest 2nd highest[g]
SO_2	Annual	1	80[k]	Maximum 1st highest[g]
	24-hour	5	365[k]	Highest 2nd highest[g]
	3-hour	25	1,300[k]	Highest 2nd highest[g]
NO_2	Annual	1	100[f]	Maximum 1st highest[g]
Noncarcinogens				
Acrolein	24-hour	N/A	12.5	Maximum 1st highest[g]
MDI	24-hour	N/A	2.5	Maximum 1st highest[g]
Propionaldehyde	24-hour	N/A	21.5	Maximum 1st highest[g]
Carcinogens				
Acetaldehyde	Annual	N/A	4.50E-01	Maximum 1st highest[g]
Benzene	Annual	N/A	1.20E-01	Maximum 1st highest[g]
Methylene Chloride	Annual	N/A	2.40E-01	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.93
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.
[d] The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants.
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year.
[g] Concentration at any modeled receptor.
[h] Never expected to be exceeded more than once in any calendar year.
[i] Concentration at any modeled receptor when using five years of meteorological data.
[j] The highest 2nd high is considered to be conservative for five years of meteorological data.
[k] Not to be exceeded more than once per year.

2.2 *Background Concentrations*

The background concentrations for Post Falls, obtained from DEQ's background concentration data[1] for PM_{10}, were used in this analysis. The applicant only needed to use the annual PM_{10} background concentration because the 24-hour impacts for the project were below the applicable significant contribution levels. The annual PM_{10} concentration used in the analysis is 23.7 $\mu g/m^3$.

3. ASSESSMENT OF SUBMITTED MODELING ANALYSIS

3.1 *Modeling Methodology*

Geomatrix Consultants, Inc. conducted dispersion modeling for Potlatch to demonstrate that the proposed project would not cause or significantly contribute to a violation of any NAAQS. ISCST3 was chosen for the analysis. The analysis included a significant impact analysis for PM_{10} and a TAP impact analysis for those pollutants whose emissions exceeded the applicable screening emissions limits. A full impact analysis was included for PM_{10} because the annual PM_{10} concentration from the project exceeded the SCL. The following table summarizes the parameters used in the model.

[1] Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

Table 3.1 MODELING PARAMETERS

Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	No protocol was submitted	Although no protocol was submitted, the analysis adhered to established guidelines for regulatory dispersion modeling.
Model Selection	ISCST3	ISCST3 is the recommended model for situations where modeled receptors are not within building recirculation cavities.
Meteorological Data	Rathdrum 2000 meteorological data	This is the most representative data available for this area. The meteorological data was processed so that any mixing height below 50 meters was reset to 50 meters.
Model Options	Regulatory Default	Regulatory default is the recommended setting.
Land Use	Rural	The applicant estimated the population density within three kilometers of the facility to be approximately 506 people per square kilometer. This is lower than the EPA criteria for urban conditions of 750 people per square kilometer.
Terrain	Terrain effects were analyzed	There is some elevated terrain to the south of the facility. This was accounted for in the analysis.
Building Downwash	Downwash was analyzed	ISCST3 is capable of calculating concentrations in the wake regions of buildings. No calculations for the cavity region were made in this analysis because the cavity regions do not extend into ambient air.
Receptor Network	25 meter spacing along the fenceline; 50 meter spacing out to 1,000 meters; 250 meter spacing out to 5,000 meters	This receptor network is sufficient for this analysis.
Facility Layout	N/A	The facility layout was compared to the submitted plot plan and aerial photographs of the site. DEQ determined that the facility layout used in the analysis appropriately represents the facility.

3.2 Emission Rates

The analysis included three different emission increase scenarios. The first is a significant impact analysis for short term PM_{10} impacts. The emissions rates in the short term significant impact analysis are the increase in emissions associated with this project. The emissions rates in the long term significant impact analysis are the annual increase in emissions from this project averaged over 8,760 hours. The emissions rates in the facility-wide impact analysis are the maximum potential to emit for each unit. The toxic pollutant emissions rates are the increase in emissions associated with this project. The rates used for carcinogens are the increase in emissions from this project averaged over 8,760 hours. The rates used for non-carcinogens are the increase in hourly emissions. The following tables summarize the emissions rates used in the analysis.

Table 3.2 CRITERIA POLLUTANT EMISSION RATES

Stack ID	Description	Significant Impact Analysis		Facility-Wide Impact Analysis
		PM_{10} Short Term (lb/hr)	PM_{10} Long Term (lb/hr)	PM_{10} Long Term (lb/hr)
DRAG_BH	Drag Chain Baghouse		2.56E-01	3.60
MCLONE	Particle Dryer Multiclone	8.96E-01	1.09E+00	3.92
SCALP_BH	Scalper Baghouse		1.04E-01	1.46
RECLM_BH	Reclaim Baghouse		1.63E-01	2.29
SNDER_BH	Sander Baghouse		2.91E-01	4.08
SDSLO_BH	Sanderdust Silo Baghouse		3.02E-02	4.29E-01
WEST_PV	West Plywood Press Vent	3.36E-01	4.06E-01	1.47
EAST_PV	East Plywood Press Vent Baghouse	3.36E-01	4.06E-01	1.47
NORTH_PV	North Plywood Press Baghouse	3.36E-01	4.06E-01	1.47
BC_BH	Sawline Baghouse		2.02E-01	2.83
SOVER_BH	Sanderdust Overs Baghouse		1.51E-02	2.14E-01
ESP	Electrostatic Precipitator Stack			1.29
NSTORE	North Storage Building	3.81E-04	4.60E-04	1.67E-03
SSTORE	South Storage Building	3.81E-04	4.60E-04	1.67E-03

Table 3.3 TOXIC POLLUTANT EMISSION RATES

Stack ID	Acetaldehyde (lb/hr)	Acrolein (lb/hr)	Benzene (lb/hr)	MDI (lb/hr)	Methylene Chloride (lb/hr)	Propionaldehyde (lb/hr)
DRAG_BH						
MCLONE	9.29E-02	2.18E-02	9.29E-03		3.11E-03	5.95E-03
SCALP_BH						
RECLM_BH						
SNDER_BH	1.08E-02	9.76E-03	4.01E-03		4.26E-03	1.10E-02
SDSLO_BH						
WEST_PV	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
EAST_PV	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
NORTH_PV	1.33E-02	1.17E-02	4.17E-03	2.33E-03	4.60E-03	1.33E-02
BC_BH	4.76E-03	1.21E-02	4.76E-03		5.26E-03	1.35E-02

3.3 Emission Release Parameters

Table 3.4 STACK PARAMETERS

Stack ID	Easting (m)	Northing (m)	Elevation (m)	Stack Height (ft)	Temperature (°F)	Exit Velocity (m/s)	Stack Diameter (ft)
DRAG_BH	506,674	5,283,490	668	27.0	70.0	30.2	3.0
MCLONE	506,709	5,283,521	668	65.0	120.0	23.2	3.0
SCALP_BH	506,698	5,283,569	668	62.0	70.0	33.9	1.8
RECLM_BH	506,655	5,283,522	668	25.0	70.0	34.2	2.3
SNDER_BH	506,706	5,283,498	668	45.0	70.0	7.7	6.3
SDSLO_BH	506,708	5,283,484	668	80.0	70.0	10.0	1.8
WEST_PV	506,699	5,283,578	668	66.0	120.0	10.5	4.5
EAST_PV	506,705	5,283,578	668	66.0	120.0	10.5	4.5
NORTH_PV	506,702	5,283,582	668	66.0	120.0	10.5	4.5
BC_BH	506,637	5,283,521	668	32.0	70.0	42.2	2.3
SOVER_BH	506,660	5,283,526	668	25.5	70.0	8.5	1.4
ESP	506,682	5,283,479	668	51.0	700.0	13.2	3.0

3.4 Results

3.4.1 Significant Impact Analysis Results

Table 3.5 SIGNIFICANT IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Ambient Concentration ($\mu g/m^3$)	Significant Contribution Levels ($\mu g/m^3$)	Exceeds the SCL (Y or N)
PM_{10}	24-hour	4.98	5	N
	Annual	2.25	1	Y

The annual PM_{10} concentration exceeded the significant contribution levels. A full impact analysis was required to demonstrate compliance with the PM_{10} NAAQS.

3.4.2 *Full Impact Analysis Results*

Table 3.6 FACILITY-WIDE FULL IMPACT ANALYSIS

Pollutant	Averaging Period	Facility Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total ($\mu g/m^3$)	Percent of NAAQS
PM_{10}	Annual	19.2	23.7	46.2	85.8%

3.4.3 *Toxic Air Pollutants Results*

Table 3.7 TOXIC POLLUTANT CONCENTRATIONS

Noncarcinogens	Averaging Period	Concentration ($\mu g/m^3$)	AAC ($\mu g/m^3$)	Percent of AAC
Acrolein	24-HR	0.22241	12.5	1.8%
MDI	24-HR	0.02415	2.5	1.0%
Propionaldehyde	24-HR	0.21	21.5	1.0%
Carcinogens	**Averaging Period**	**Concentration ($\mu g/m^3$)**	**AACC ($\mu g/m^3$)**	**Percent of AACC**
Acetaldehyde	Annual	0.0924	4.50E-01	20.5%
Benzene	Annual	0.02	1.20E-01	16.7%
Methylene Chloride	Annual	0.01832	2.40E-01	7.6%

The results of the dispersion modeling demonstrate, to DEQ's satisfaction, that the sander dust project will not cause or significantly contribute to a violation of any ambient air quality standard.

4. ADDITIONAL ANALYSIS

Due to the relatively high annual impacts associated with this facility, and 24-hour impacts that were only slightly under the SCL, DEQ conducted an additional analysis for 24-hour PM_{10} impacts. DEQ ran the facility-wide long-term model that was submitted by Potlatch and processed it so that 24-hour concentrations were calculated. DEQ made no other changes to the model. The resulting 2nd highest concentration was 96.7 $\mu g/m^3$. When added to the background concentration for this area (67 $\mu g/m^3$) the resulting concentration is 163.7 $\mu g/m^3$. This is significantly higher than the 24-hour NAAQS for PM_{10}. DEQ air quality dispersion modeling staff recommend that refined facility-wide modeling of short term PM_{10} emissions be conducted to evaluate NAAQS compliance.